PATENTS OF INVENTION

The Patent Office is to-day one of the most important British Government departments. To it inventors of new machines and processes of all kinds apply as a matter of course for legal rights to safeguard the use and manufacture of their inventions. The law of Patents is based in an essentially economic conception—the encouragement and protection of industry; it developed as an integral part of British law, and has directly influenced the formation of similar systems elsewhere.

Mr. A. A. Gomme, who has written this brief survey of the origin of Patents, was Librarian to the Patent Office until 1944, having been for forty years a member of the Patent Office staff. He is an authority on the historical aspects of patent law and practice and is the author of papers on this subject, published in the Transactions of the Newcomen Society.

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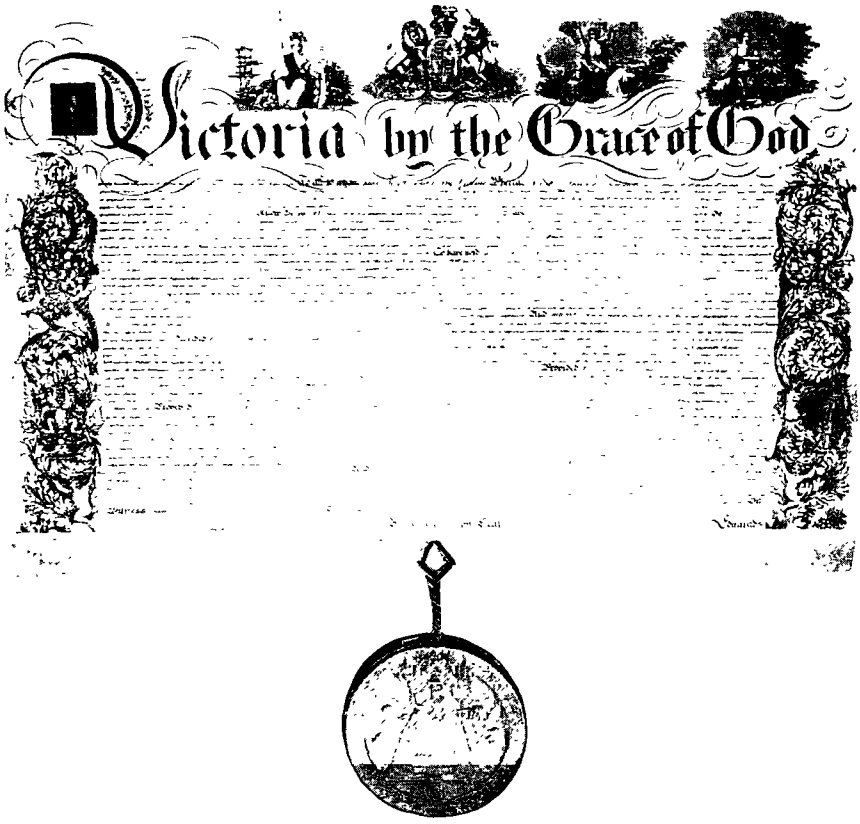

English Letters Patent of Invention before 1878.

PATENTS OF INVENTION

ORIGIN AND GROWTH OF THE PATENT SYSTEM IN BRITAIN

BY

A. A. GOMME

Late Librarian of the Patent Office

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CONTENTS

ILLUSTRATIONS

PATENTS OF INVENTION

Where any man by his own charge and industry or by his own wit or invention doth bring any new trade into the Realm or any Engine tending to the furtherance of a trade that never was used before: And that for the good of the Realm: That in such cases the King may grant to him a monopoly patent for some reasonable time until the subjects may learn the same, in consideration of the good that he doth bring by his Invention to the Commonwealth; otherwise not.

Darcy v. *Allen*, 1602.*

Patent law is concerned with the encouragement and protection by the Government of new industrial inventions by the grant on certain conditions of limited monopolies to their inventors, and derives its name from that of the grants themselves, which, after the form in which they were made, became known as Letters Patent of Invention, or, more generally but less accurately, simply as 'Patents'. All such grants have always been and still are personal and direct grants by the sovereign through the exercise of the Royal Prerogative and of his 'especial grace, certain knowledge, and mere motion', and the documents received and held by the grantees, as their warrants for claiming their monopoly rights, were called Letters Patent or 'Open Letters' (*Lat.* Litterae Patentes), because they were 'open' in the sense that they were addressed, not to particular individuals, but 'to all to whom these presents shall come', and were sealed in such a way that they could be read without breaking the seals, in contradistinction to their opposite number, 'Letters Close', which were addressed to individual persons and required their seals to be broken. The granting of privileges by the Crown by means of Letters Patent is, however, much older than patents of invention and much wider in scope. Patents of invention form but one series out of a number of such grants, which have been used from very early times for the bestowing of all kinds of privileges

* For references, see notes on pp. 46–48

by the King. Letters Patent are to-day issued, for example, for titles of honour and for appointment to certain Offices under the Crown as well as for new inventions, while in the earlier years they were granted in great profusion for a variety of purposes extending from the two just mentioned and from such matters as denizations, pardons, and safe-conducts, to a permission for Clerks of Chancery to marry, to the repair of London Bridge, and even to leave for the widow of an executed traitor to have his head for decent burial (1405). All of these grants were 'patents', and all, including patents of invention, were similar in all respects, passing through the same procedure and being recorded, whatever their nature, on the 'Patent Rolls' in one continued series according to the date of grant, patents of invention taking their chronological places among the rest without any exceptional treatment. In recent times, however, patents of invention have so far exceeded in number all other similar grants and have become of such industrial importance that the word 'patents' used by itself is always taken to-day as referring to them only.

The practice of granting these limited monopolies for new inventions is, in spite of the general condemnation of monopolies as such, regarded as not only a legitimate function of the State but one that is of definite value to the industrial and economic development of a modern community, and is now universally accepted and exercised throughout the world. The words quoted at the head of page 1 provide not only one of the earliest but one of the best expositions of the intent and extent of the system. They were spoken in 1602 by an English lawyer during proceedings on an action for infringement of a patent granted by Queen Elizabeth for playing-cards, were accepted by the judges in the case as a true statement of the law then, and are to-day generally accepted as representing the basic principle on which alone monopoly patents for invention may be granted and are now being granted.

Patents of invention existed for many years before 1602 and have a continuous story to the present day when some 200,000 are being granted throughout the world every year; this book sets out to tell the story of their beginnings and the subsequent development of the patent system in England, which, though it may not have been the true and first begetter of the system, has made lasting and fundamental contributions to patent

law and practice and has directly inspired the modern system operating in all industrial countries.

Our theme is patent law and practice, not invention. The two are not, of course, the same. Patent law, though the period of its currency corresponds to man's greatest inventive effort and probably covers as many as 90 or 95 per cent of all inventions, is a comparative latecomer in man's history, whereas invention is as old as man himself. Indeed, inventiveness is essentially the characteristic that distinguishes man from the other animals. Why and how the decisive first step to this end was taken are matters for conjecture, but certain it is that from the moment ape-man began to exploit his knowledge and observation and consciously to apply his discoveries to useful purposes, from that moment he became man, however crude his methods. Constant repetition of some phenomenon would no doubt have been necessary before the idea of using it for his own ends would have occurred to him. The plasticity of clay and its hardening under heat must have been observed many times before the idea of making vessels of clay to take the place of natural objects such as gourds became apparent to some exceptional individual, but when it did so and was put to use, another step in man's evolution took place. Naturally the process was very slow at first, but each new invention widened the confines of man's outlook and his opportunities of further discovery and quickened the pace, until the invention of agriculture and the coming of a settled life, by furnishing the occasion for new tools and household utensils and clothing, set the ball rolling in earnest. By the beginning of our era such important inventions as the wheeled vehicle, the needle, the loom, the potter's wheel, metal working, the plough, the rotary drill, the screw-press, the pulley, the steelyard, fire-producing means, glass, the lathe, the water-wheel, and others were all well known, while, without a break in the continuity as a whole, though perhaps in this or that particular art where need or fashion changed development may have been temporarily stopped or the technique lost, the Middle Ages added to their inheritance of classical technology contributions of their own as well as others brought in from the East and China. By the end of the fifteenth century, the mariner's compass, paper and the printing press, the mechanical clock, iron-casting, the spinning-wheel, fulling-stocks, gunpowder, spectacles,

the windmill, had all been invented. For most of these we do not know by whom, when, or where, the original inventions were made. Even in the mightiest days of Greece and Rome the names of inventors of new devices and apparatus were rarely known and more rarely transmitted to posterity, and with the one interesting exception referred to below, there is no recorded evidence in Classical times of any attempt by the State to protect or encourage new inventions by the grant of monopoly rights. Not that there was anything inherent in the conditions of the times to prevent the institution of such a system; there existed most of the usual town and village handicrafts and trades (bakers, shoemakers, cutlers, smiths, potters, woodworkers, armourers, metal workers, etc.), as well as mining and quarrying, building, and shipbuilding industries, and commerce and industry probably occupied as large a place in Greek and Roman life and required as proportionately large an effort in the various City states as they did in eighteenth-century England. But an ever available supply of slave labour, the absence of any but the simplest machinery and of all but the slowest production methods, and the dependence of each locality on its own handicrafts, provided little occasion for the State to intervene or for the innovator to conceive the idea of a monopoly to protect him against copyists. This would have required some exceptional interest on the part of the authorities in a particular craft or industry, such as that illustrated by the recorded existence, about the year 500 B.C., of one-year cookery monopolies in Sybaris, a Greek colony famous for its luxurious living and self-indulgence. Athenaeus (*fl.* third century A.D.) in his *Banquet of the Learned* quotes Phylarchus the historian as saying of the Sybarites—'And if any confectioner or cook invented any peculiar and exclusive dish, no other artist was allowed to make this for a year; but he alone who invented it was entitled to all the profit to be derived from the manufacture of it for that time, in order that others might be induced to labour at excelling in such pursuits'. Though Athenaeus is writing some five hundred years after his immediate authority who was himself writing two centuries or so after the recorded event, and whether or not the report was well founded, we have here—at any rate as early as A.D. 250—a clearly expressed reference to monopoly patents. Nothing more, however, is known about them. If they existed at all their life was short, and their

example was not to be followed until almost two millennia had passed, and then by Western Europe where the political and economic conditions were more suitable for their development, and particularly by England, where the subordination of local to the central authority and the emergence of nationhood were most complete.

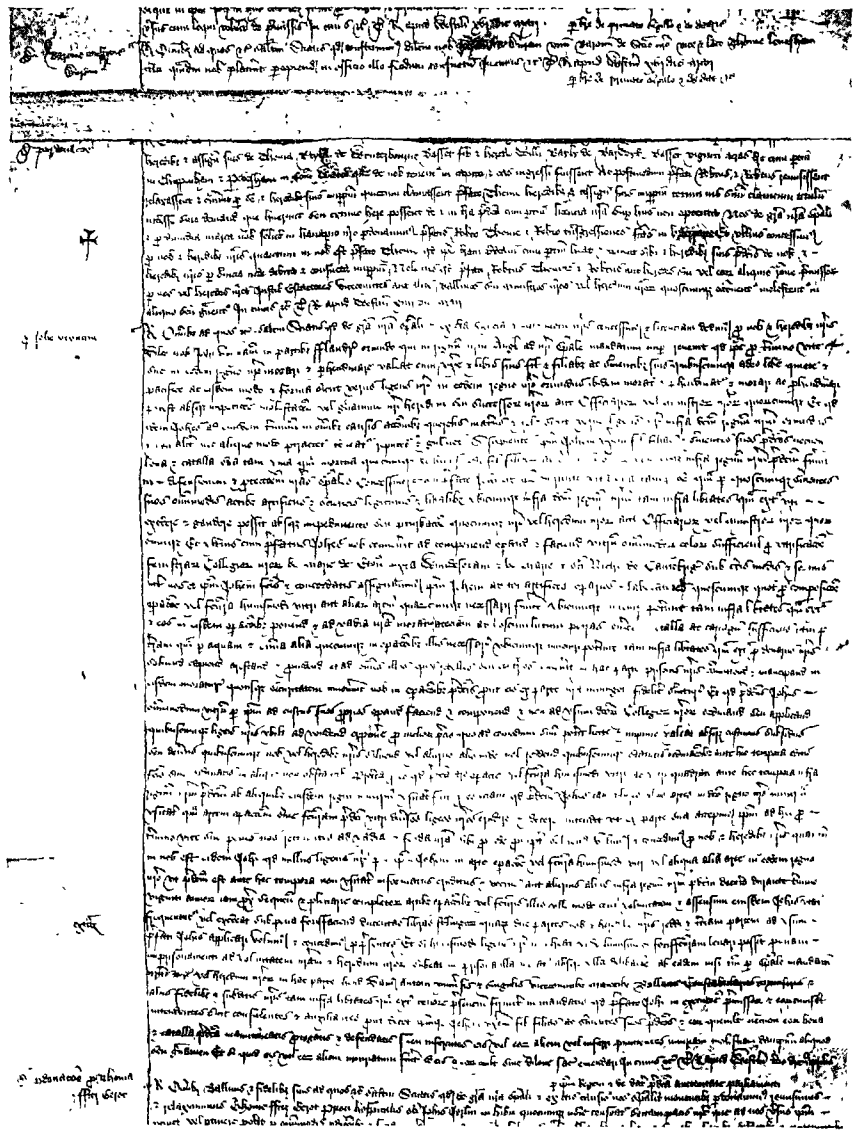
THE ORIGIN OF PATENTS

Even so the origin of patents for invention is obscure. Our sources of information on the subject lie among the State archives of Europe, and any conclusions arrived at are subject to reconsideration as new records come to light. What is clear, however, is that their introduction was not due to the prevision of any far-sighted prince or statesman or indeed to any legislative act, ordinance, or proclamation. Unheralded and unquestioned they took their place, as has been pointed out, as part of an older and much larger system, among a host of other privileges granted in the exercise of the prerogative powers of the sovereign authority—whether the King in England or the Doge and Senate in Venice. They fitted naturally and neatly into this system, and developed slowly and almost imperceptibly to their full maturity within it. Development, however, was in quantity rather than in quality (other than that occasioned by the growing complexity of industry); radical changes have been made in the practice, but in essence a patent to-day is what it was four or five hundred years ago.

Long before a regular patent system developed anywhere, a number of isolated grants appear in various countries, which well illustrate the beginnings. Four of these are known, which, spread over a period of two hundred years, have no recorded predecessors in their respective countries and no near successors there. The earliest of all is dated 1236. On March 2 of that year there is a grant of the English King Henry III, who was also ruler of the whole of western France, confirming a grant by the Mayor of Bordeaux to Bonafusus de Sancta Columba, citizen of Bordeaux, whereby he and his fellows alone in Bordeaux were permitted to make cloths of divers colours after the manner of the Flemings, the French, or the English, for a term of fifteen years; at the end of which period anyone is to be at liberty to make any and as many clothes as they please and the

said Bonafusus and his fellows are to have no advantage. The next is the earliest known grant from Italy. In 1421 a privilege was granted by the Signoria of Florence to Filippo Brunelleschi, the great engineer and architect of the cathedral dome, the Palazzo Pitti, and other famous buildings of Florence, 'man of outstanding understanding and amazing industry and inventiveness', for three years from June 19, 1421, for a method of transporting heavy loads on the Arno and other rivers which would operate at any time and at a lower cost than formerly. 'Because Brunelleschi did not want to give the invention to public use for fear of being robbed of the reward of his labours, the privilege is granted with the express intention not only that the invention may be made useful as well for himself as for the generality but particularly also that he himself may be urged to further exertion, and stimulated to achieve greater inventions; the Government agrees to protect the inventor against unauthorised working and to grant the author an immediate monopoly for the period stated by prohibiting the use of every form of transport ship not in use at the date of the privilege unless it be built by Brunelleschi himself or with his consent.' The third is again from Italy—this time from Venice—where on January 21, 1444, there was granted to a certain Antonius Marini de Francia a privilege to construct 'tot molendina sine aqua ad macinandum frumentum quot sint sufficientia ad usum et commodum hujus civitatis . . . quod aliquis non possit facere nec fieri facere molendina sine aqua [in Venice and its territories] usque ad annos viginti'.* The fourth instance on the list is the earliest English grant and is dated April 3, 1449. It is a licence to John of Utynam 'returned of late to England from Flanders at the King's command', to live here with his family and to exercise all arts and sciences without hindrance; and because his art of making coloured glass has never been used in England 'and John intends to instruct divers lieges of the King in many arts never used in the realm beside the said art of making glass, the King grants that no liege of the King learned in such arts shall use them for a term of 20 years against the will and consent of John'.

* '. . . such waterless mills as will grind sufficient corn to meet the needs and convenience of this city . . . which no others shall do, nor shall they have waterless mills constructed [in Venice and its territories] for twenty years hence.'



The earliest known English patent of invention, A.D. 1449. From the Patent Rolls in the Public Record Office.

William Cecil, Lord Burghley (1520–1598) Elizabethan Statesman (Portrait by Gheeraerts in the National Portrait Gallery)

As has been said, these four grants stand alone so far as we know at present. A full century was to elapse before the next invention grant appeared in the English records, and in Italy the field is left almost entirely to Venice. Venice may indeed claim with a fair degree of confidence to be the first State to have had a regularised patent system, though it was the later development in England that endured, and England's example that gave birth to the world's patent system of to-day.

The first Venetian patent known to us is the one mentioned above, granted in 1444. It was followed by three more single grants, one in 1460, one in 1469 (granting to John of Speyer the absolute monopoly of printing in Venice for five years), and one in 1472. But during the remainder of the fifteenth and the whole of the sixteenth centuries almost every year saw a number of privileges allowed by the College or Senate; some of these were purely copyright licences, but some were for improvements in the art of printing, as, for example, that in 1501 to Aldus for his italic type, and in the printing press, and many more were for other industrial inventions. Of the latter, nearly one hundred appear to have been applied for or granted between the years 1475 and 1550 (i.e., before the real start of the English system), and these included machines for raising water, grinding corn, fulling, draining lands, excavating canals, perpetual motion, etc., for terms ranging from twenty to sixty years. It is noteworthy that in most of these grants utility and working were the main considerations, a term of six months or a year being usually allowed for 'experientia'. That this remained a feature of Venetian practice is evidenced by the grant in 1594 for a water-raising machine to the celebrated Galileo, which provided that one of the machines was to be erected within one year of the grant. There was, then, a regular practice of granting patents in Venice which began about 1475, and this seems to be confirmed by a declaration of the Senate dated March 15, 1474, which said that if anyone made and brought to perfection in Venice any new and ingenious machine not made previously in Venetian territory, others would be prohibited from making the same for ten years without the consent and licence of the inventor; adding that the State would be at liberty to use the invention and that infringers would be fined 100 ducats and the infringing machines destroyed. The precise significance of this

declaration is not very clear for its terms were obviously not binding, but it seems to be the earliest official pronouncement directly bearing on the subject of patents of invention, and even if only as a recognition by the State of the validity of patent grants and an invitation to inventors to take advantage of them, it is of considerable importance at this early date.

Other early instances of patent grants could be cited from other countries. There are, for example, a grant by Emperor Charles V dated 1545 to Hans Hedler for twelve years for wind and water mills and others of about the same period from Saxony and the German states; there are the earliest known French grants, to Mutio for glass and to Abel Foullon for a range-finder, both in 1551; and others are recorded in Antwerp, Holland, and Spain. But the Venetian records have been referred to in some detail because a number of the Venetian industrial monopoly grants antedate by many years the beginnings of the system in England (if we omit as being out of the picture the single isolated grant in 1449 already referred to), and because the question therefore arises as to whether this country borrowed the practice of granting patents from Venice or whether there was independent development in the two countries. There is no direct evidence on this point one way or the other. On the one hand we have the undeniable fact that a patent system was well established in Venice before the end of the fifteenth century and that those in authority in this country may well have known of it, whether from their own political representatives or from travellers or the many Italian merchants passing to and fro. There are, indeed, two significant allusions in our records which lend support to the argument that such was the case. Antonio Guidotti, a Venetian, who had received papers of denization from Henry VIII in 1533, wrote from Messina, Sicily, on March 20, 1537, to Thomas Cromwell, the King's Principal Secretary, informing him that he had persuaded some Italian silk weavers to go to England and set up their craft in Southampton, and asking Cromwell to intercede with the King to grant him (Guidotti) a 'privilege for 15 or 20 years that no man may make such work except under him'. No grant to Guidotti is recorded and nothing is known of how this proposal was received by Cromwell, but the casual manner in which Guidotti mentions the privilege suggests that he was well acquainted with the Venetian practice and that

he assumed such a request would be well understood at the English Court without explanation. Another Italian is not quite so sanguine and seeks to justify his application in England for a monopoly patent after the Italian model. Among the English State Papers for 1559 there appears a petition, undated, from Jacobus Acontius in which he prays for the grant of a patent for his grinding machine on the ground that 'nothing is more honest than that those who by searching have found out things useful to the public should have some fruit of their rights and labours as meanwhile they abandon all other modes of gain, are at much expense in experiments, and often sustain much loss'. This document would have been of more importance to the argument but for two facts. First there are at least two English patents (to Henry Smyth in 1552 for making Normandy glass and to Burchardt Cranick in 1554 for special methods of mining) before the assumed date, 1559, for the petition of Acontius, and his case had therefore already been conceded; secondly, the patent granted on the petition was not sealed till September 1565, and though the lapse of six years between petition and grant was not impossible it was very unusual at any time, and it seems more than likely that the petition has by error got among the 1559 papers and that its true date is 1565, by which time the granting of patents was in full swing here. Nevertheless, Guidotti's letter and the petition of Acontius do provide good evidence that Italian influence was at work in England.

On the other hand, the English soil was fertile enough without the necessity of imported seed or fertiliser; the ground had been well prepared, it is suggested, by the deliberate policy of the Crown from the times of Edward II and Edward III of fostering the industries of the country, both by regulation at home and by the attraction of new industries to its shores. Charters incorporating the craft and trade guilds became frequent from this time, and by the middle of the fourteenth century the practice of giving government protection by letters patent to foreign workers coming to this country with expert knowledge of their craft was well established. This latter policy is particularly noticeable in the all-important cloth industry. In 1327, a royal proclamation was read in London to the effect that the wearing of foreign cloth was prohibited and that 'in order to encourage people to work upon cloths, the king would have all men know

that he will grant franchises to fullers, weavers, dyers, and other cloth-workers who live mainly by this mistery whenever such franchises are asked for', and ten years later this was implemented by Act of Parliament, which enacted that 'all the clothworkers of strange lands of whatsoever country they be which will come into England Ireland Wales and Scotland within the king's powers shall come safely and surely and shall be in the king's protection and safe conduct to dwell in the same lands choosing where they will. And to the intent the said clothworkers shall have the greater will to come and dwell here our sovereign lord the king will grant them franchises as many and such as may suffice them'. The earliest grant of protection issued in pursuance of this policy was one in 1331 to John Kempe of Flanders, weaver of woollen cloths 'to exercise and teach his trade in this country', and many similar grants quickly followed to fullers and weavers from the Low Countries who migrated hither in considerable numbers and undoubtedly under this protection system helped to raise the English woollen industry to the unique position it held during the sixteenth and seventeenth centuries. The cloth industry was not the only one aided in this way. Mining owes a great deal to the highly skilled German miners who came or were invited over and given protection, first by Edward II (1324) and later by Edward IV and his Tudor successors; and salt manufacture—by a process hitherto unknown in the kingdom—was the subject of John of Schiedam's grant of protection in 1440.

None of these grants, it is true, were patents in our sense of the word. They are, however, the expression at an early date and extending over a long period of a definite and constructive policy on the part of the Crown of improving the industrial position of the country by instructing English workers in the best continental methods and by introducing new industries. It needed but a small step—though an all-important one—from these grants of protection to patents proper, under which the recipients during a limited period sufficient to allow of the teaching and training of native workmen in the new manufacture or process, were given monopoly rights. It must not be overlooked that monopolies as such—for other but not wholly dissimilar purposes—were by no means unknown to English statesmen and public of the sixteenth century, as the charters to the Craft Guilds and Companies of trading merchants, and the numerous printing

licences of the time bear witness, and the isolated grant in 1449 to John of Utynam, if it has no further significance, at least shows that a monopoly patent for a new industry was not foreign to English ideas. When patents for inventions did come, they took substantially the same form and were issued under exactly the same procedure as these protection and charter grants, and it seems to the present writer not illogical to see in this pre-occupation of the English crown with the improvement and encouragement of industry the direct ancestor of the English patent system. For this policy, as the quotation at the beginning clearly shows, was carried forward into the patent system itself, became the main basis for the patent grant, and still figures in the Patents Act as one of the reasons for the present-day granting of patents. It will have been noticed that, like John Kempe in 1331, John of Utynam in his 1449 patent promises 'to instruct divers lieges of the crown in the art of making coloured glass', and this or an equivalent clause recurs again and again in the sixteenth-century English patent grants. Thus a grant of 1552 gives Henry Smyth the sole right for twenty years to make Normandy glass and to bring in certain strangers expert in the art whereby divers of the king's subjects 'maye be sett to worke and gett their lyvyng and in tyme learne and be hable to make the said glasse them selfe and so from tyme to tyme there to instructe the others in that science and feate'; the soap-making patent of 1561 to Groyett and Le Lesuryer grants that they and their servants 'whereof two at the least shall be of our lieges and subjects borne within our realm of England' may for ten years work and make white hard soap; the patentees of a 1565 grant for leather manufacture undertake that 'for every workeman being a straunger borne they shall kepe for in and about the workinge and dressing of the said skynnes one person borne within this realme as a prentice and every such apprentice shall sufficientlie instructe in and for the workinge and dressing of all and every the said skynnes'; and so on. Indeed, the actual working in this country of an English patent was an essential condition of the validity of the grant from its beginnings to the middle of the eighteenth century. The attitude of the crown is well shown in Elliott & Meysey's patent of April 1, 1614, which has the following: 'Whereas our loving subjects are inforced to have steele brought from beyond the seas which in tymes of necessitie might be sought for in

forragne partes yett not obtayned but att the pleasure of other princes at unreasonable rates, and for as much as yt will redound much to the honor and benefitt of us and of the common wealth that a commodotie of such necessitie and use as good steele is may be had and made within our said Domynions . . . whereby many of our good subjects may [be] imployed and our self and all our subjectes be out of feare to paye for the same att such unreasonable rates yt may please other princes . . . to sett upon the same whensoever they thincke good'. That working was the main consideration that influenced both Crown and Legislature is clear. The Courts at an early stage laid down that the person who introduces into this country an invention not known before within the realm was the true and first inventor within the meaning of the Statute of Monopolies, and in one of the few Commonwealth patents, that granted by Act of Parliament in 1651 to Jeremy Buck for the smelting of iron with coal, it was a condition under the Act that Buck 'after seven years of the term do and shall take apprentices and teach them the knowledge and mystery of the said new invention', while in all legislative Acts extending and confirming patents it is the public good that has been or is expected to be derived from the respective inventions that is stressed and not the needs of the inventors. Patents were refused for inventions which it was thought would interfere too much with existing industry; patents were annulled when the inventions for which they were granted were not put into practice within a reasonable time, as, for instance, by a proclamation by the Privy Council dated April 9, 1639, which revoked 'all patents for new inventions not put into practice within three years after the date of the grant'. There must also be mentioned the revocation clause in Letters Patent which empowered the Privy Council to revoke grants which were shown to be generally inconvenient or prejudicial to the realm. This clause, which appears as early as 1575 and became a regular feature of the grant, was inserted expressly for the purpose of enabling a patent to be voided if any existing trade or industry was hampered by it or the introduction of a new one obstructed, or if the invention had not been put into practice, and it was frequently made use of.

This marked continuity of purpose—the encouragement of new manufactures—from the early fourteenth century, through the period of protection

grants and into that of monopoly patents, which does not appear to be anything like so evident or persistent a feature of the Italian and other continental grants, may, it is thought with some justice, be taken as giving strong *a priori* support to the argument that patents for invention in this country were rather a direct and logical outcome of the earlier industrial policy of the Crown than a copy from continental practice, though the acceptance of this contention must not in any way blind us to the actual priority of Venice in the field.

PATENTS AND PATENT LAW IN ENGLAND

Whether derived or independent in origin, however, the granting of patents in England, once started, came to stay. John of Utynam's patent of 1449 stands solitary, detached, and inscrutable. It has no known successor till the grant on April 26, 1552, to Henry Smyth for the making of Normandy glass, and it is the latter that inaugurates the long English record. The system became firmly rooted during Queen Elizabeth's reign under the vigorous statesmanship of William Cecil, Lord Burghley, who, during the whole of his long tenure of office, gave unceasing attention to the industrial and economic as to all other aspects of English life, and it has continued in unbroken sequence to the present time, leaving on record a unique story of the progress of technology through the last four hundred years. The total number of patents granted to date falls just short of the one-million mark, and but for the war would have passed it. But the frequency curve rises steeply at this end. Well over one-half of the total number has been granted since the year 1900, and the nineteenth century was responsible for about 350,000 of the remainder, leaving less than 10,000 for the whole of the preceding three centuries.

If, however, progress has been continuous, it has not been unruffled. At a very early stage, the powers of the Crown under the Royal Prerogative were the subject of criticism, not, it must be said at once, on account of the grant of patents of invention as such, but because certain patentees were abusing their privileges and because Queen Elizabeth and her immediate successors—deceived, as the law puts it, by 'false suggestions' made by the

petitioners for patents—granted a number of patents, that, far from being designed to encourage the progress of industry, were definitely monopolies in restraint of existing trade and generally inimical to the common weal. There can be little doubt that while Burghley was in office great care was taken on the whole to see that the Royal Prerogative to grant privileges (a common-law, not a statutory, right) was exercised with discrimination and to the national advantage, but it is equally true that this did not suffice to prevent some serious misapplications of it. Queen Elizabeth, partly on the persuasion of the patentees, only too anxious to line their own pockets, and partly no doubt as a source of revenue for the Exchequer of which she was in desperate need, granted some patents bestowing on their holders, often courtiers and favourites of the Crown, the sole right to control and regulate existing and well-established industries and trades and, with the right, the arbitrary power to fix prices, to enter houses and search them, and to exact penalties from all who opposed them. Some of these patents, which were clearly against the common interest, created great hardships and raised alarm throughout the country, and finally led in 1601 to heated protests in the House of Commons, where an effort was made first by petition and then by bill to remedy the grievances. The opposition could not be stilled even by the eloquence of Sir Francis Bacon, and the stage was well set for a first-class battle, with the Royal Prerogative at stake, when the situation was eased for the time being by the intervention of the Queen herself, who issued a proclamation (November 1601) dealing with the abuses, and two days later, in one of her most celebrated speeches, told the House of Commons 'Since I was queen, yet did I never put my pen to any grant but upon pretext and semblance made me, that it was for the good and avail of my subjects generally, though a private profit to some of my ancient servants, who have deserved well; but that my grants shall be made grievances to my people, and oppressions, to be privileged under color of our patents, our princely dignity shall not suffer it. When I heard it, I could give no rest unto my thoughts until I had reformed it, and those varlets, lewd persons, abusers of my bounty, shall know I will not suffer it'. The proclamation revoked forthwith the more obnoxious of the patents and for the others declared that 'all and every her Highness's loving subjects that at any time hereafter shall find themselves

grieved injured or wronged by reason of any of the said grants or any clause article or sentence therein contained, may be at his or their liberty to take their ordinary remedy by her Highness's laws of this realm, any matter or thing in any of the said grants to the contrary notwithstanding'. The Queen's decision that in future the validity of patents should be adjudged by the Common Law was almost at once put to the test. An action, already referred to, was brought in the Court of Queen's Bench in the spring of 1602 by Edward Darcy against Thomas Allen (who was probably supported in the background by the City Corporation of London) for infringement of his playing-card patent of 1598, and resulted in a verdict for the defendant on the ground that the grant was bad in law. The first round against monopolies was thus won and was consolidated by later judicial enunciations. Then, in 1610, James I, having previously confirmed the proclamation of 1601, published his *Book of Bounty*, in which he expressly forbade any of his servants or subjects (of what condition soever they be) to propound or offer any suits to him by which the people in general might be impoverished or oppressed, and defined those patents which might be lawful for him to grant. And, finally, after one such bill passed by the Commons had been rejected by the Lords, in 1624 came the Statute of Monopolies which, based on James's own declaration of 1610, gave statutory form to the limitation of the powers of the Crown and laid down once and for all the conditions on which patents of invention might be allowed, banning all monopolies save only, by Section 6, 'any letters patent and grants of privilege for the term of fourteen years or under hereafter to be made of the sole working or making of any manner of new manufacture within this Realm to the true and first inventor and inventors of such manufactures which others at the time of making such letters patents and grants shall not use so as also they be not contrary to the law nor mischievous to the State by raising prices of commodities at home or hurt of trade or generally inconvenient'. This section 6 of the Statute of Monopolies is still in force and still governs the granting of patents of invention in this country. The Statute, by section 2, also enacted that patent grants of all kinds and their force and validity were in future to be tried and determined by and according to the common laws of the realm and not otherwise.

In spite, however, of the Statute of Monopolies, Charles I and the later Stuart sovereigns continued for revenue purposes to issue monopolies that were flagrantly contrary to its provisions, and probably it was not till the Revolution of 1689 finally secured the supremacy of Parliament and placed the entire control of the State finances in the hands of the House of Commons, that all temptation thus to increase his revenue was removed from the sovereign.

After the Statute of Monopolies no further major legislative enactment affected the law of patents until the Amendment Act of 1852, which, for the first time, gave statutory sanction to the form of Letters Patent of invention and revolutionised the procedure for obtaining them by the virtual creation of the Patent Office, though in its present form this more correctly dates from the Act of 1883. It may seem somewhat surprising that in England, the home of patents, the medieval procedure for obtaining a patent remained in being and unchanged for 300 years, and that throughout the period of rapidly expanding industrial activity of the eighteenth and early nineteenth centuries there was not in London, until as late as 1852, an Office where an application for a patent could pass through all its stages from the originating petition to the final sealing and the enrolment of the specification. Yet such was the case; the procedure at the beginning of 1852 was substantially the same as it was for all grants in 1552, being still governed by a Statute of the fifteenth century, by a few orders of the Privy Council of the same period, and by various decisions of the Law Officers, and it was so cumbrous and costly, entailing independent visits to five or six separate offices, that the surprising thing is that so many inventors actually took the trouble to go through with it.

Let us judge for ourselves. The actual procedure for patents of invention up to the year 1852 was as follows:

1. First the inventor prepared a petition to the Crown, praying for a patent to be granted to him, together with an affidavit which had to be sworn before a Master in Chancery. (Fees—Master 1*s.*; Stamp, 6*d.*)

2. He took the petition and affidavit to the Office of one of the Secretaries of State (later, always the Home Office). Here the Petition was

endorsed by the Secretary of State, referring it to one of the Law Officers. (Fee—£2 2*s.* 6*d.*)

3. The endorsed petition was called for and taken to the Law Officer's chambers, where it was left for him to make his report that the petition should be granted. (Fee—£4 4*s.*)

4. If the Law Officer's report was favourable, the inventor received back his Petition with the Report, and took them to the Secretary of State's office, where a Warrant on paper was prepared, addressed to the Law Officer and requiring him to prepare a bill for the grant of a patent. This Warrant was signed by the Sovereign and countersigned by the Secretary of State. (Fees—For the signature, £7 13*s.* 6*d.*; Stamp duty, 7*s.* 6*d.*)

5. The signed Warrant was taken to the Law Officers, where the Clerk of the Patent Bill office prepared on parchment a bill incorporating and prescribing the exact wording to be used in the final Letters Patent. A docquet of the bill was also prepared and signed by the Law Officer. (Fees—For the bill, £2 7*s.* 6*d.*; for the docquet and Law Officer's signature, £5; engrossing clerk, £1 1*s.*; Stamp duty, 7*s.* 6*d.*)

6. The Patent Bill was collected and taken to the Secretary of State's Office where it received the Sovereign's signature at the top and was countersigned by the Secretary of State. In this signed form it was known as the King's or Queen's Bill, and was the authority to the Signet Office to prepare the Signet Bill. (Fees—For signature, £7 13*s.* 6*d.*)

7. The King's Bill was taken to the Signet Office where a Signet Bill was prepared on parchment and sealed with the Signet. The Signet Bill authorised the Lord Privy Seal to prepare a Writ of Privy Seal to the Lord Chancellor, and was an exact transcript of the King's Bill except for the formal direction to the Lord Privy Seal at the beginning and the warranting clause at the end. The King's Bill was retained in the Signet Office as its warrant.* (Fees—£5 0*s.* 9*d.*; Stamp duty, 7*s.* 6*d.*)

* The Signet Office was abolished by Parliament in 1851, and for the few months that elapsed before the coming into force of the Patent Law Amendment Act of 1852, this stage was eliminated and the King's Bill authenticated by the Privy Seal became the warrant to the Lord Chancellor to seal a patent.

8. The Signet Bill was taken to the Office of the Lord Privy Seal where a Writ of Privy Seal was prepared on parchment and sealed with the Privy Seal. The Writ was addressed to the Lord Keeper of the Great Seal (usually the Lord Chancellor) and authorised him to prepare the final instrument. It was an exact transcript of the Signet Bill with the necessary formal changes at the beginning and end. The Signet Bill was retained at the Privy Seal Office as its Warrant.* (Fees—£4 15*s.* 9*d.*; Stamp duty, 7*s.* 6*d.*)

9. The Privy Seal Writ was collected and taken to the Office of the Lord Chancellor, where it was endorsed with the date of its receipt. The Letters Patent were engrossed on parchment in the exact wording of the Writ, dated as of the date endorsed on the Writ as the date of delivery to the Lord Chancellor, and sealed with the Great Seal. They were placed in a box and handed to the inventor, now the patentee, the Writ of Privy Seal being retained as the Chancellor's Warrant. (Fees—Lord Chancellor, £1 11*s.* 4*d.*; for the engrossment, £4 6*s.* 4*d.*; for sealing and enrolment, £7 13*s.* 4*d.*; for the Pursebearer, £1 6*s.* 6*d.*; for box, 9*s.* 6*d.*; Stamp duty, £6.)

10. The patent was enrolled from the Writ of Privy Seal on the Patent Rolls of the particular regnal year.

During the operations described above, which naturally occupied some days at each stage, the transmission of the documents from one office to the next was the entire responsibility of the inventor or someone acting for him, who had to collect from and deliver to each office in turn, paying the necessary fees and several gratuities to doorkeepers and porters at each. Readers of Samuel Pepys's *Diary* will remember the description of his visits to the various offices in 1660 and of his being 'forced to run all up and down Chancery-lane' before receiving his patent of appointment as Clerk of the Acts to the Navy Office, and lovers of Dickens will need

* The Signet and Privy Seal bills being exact copies of the King's Bill, it was usual from about the end of the seventeenth century for two transcripts of the Patent Bill on parchment to be made by the Law Officer's Clerk at the time the Bill itself was prepared, and for those transcripts to be used at the Signet and Privy Seal Offices. The fee for the transcripts at the Patent Bill Office was £1 7*s.* 6*d.* and has been allowed for in the above statement of fees.

no reminder of his 'A poor man's tale of a patent', but may be surprised to see how little the novelist, on this occasion at all events, had to use his imagination in telling his tale.

As regards the fees charged at the various offices, the whole of which had to be paid before the patent was sealed, it is difficult to be precise about the actual figures at different times, because the records are meagre and most of them insufficiently detailed. Those given above for each stage are those which seem to have been in force during the first half of the eighteenth century, but there is no reason to think that they differ very materially from those that were enacted at other periods, except for the Stamp Duties, which were not introduced until 1694, and were progressively increased from that time onwards. The Stamp Duty on the Warrant and the Bills which started in 1694 at 2*s.* 6*d.* had become £1 10*s.* each by 1804, while the Duty on the Letters Patent was increased from £2 in 1694 by successive stages to £20 in 1804 and to £30 in 1815. The fees were complicated, too, by the fact that additional sums were charged when more than one skin of parchment was used and also when there was more than one name as grantee. Thus at the Great Seal Office, for every additional skin (and the number was taken to be that used for the Writ of Privy Seal, a skin being computed as containing 1440 words), an extra engrossment fee of £3 11*s.* 6*d.* and an extra sealing and enrolment fee of £1 13*s.* 4*d.* were charged, while additional names in the Grant cost £2 13*s.* 4*d.* each; at the Patent Bill Office, each additional skin cost £1 1*s.*, and each additional name £1 7*s.* 6*d.*; and similar extra fees were charged at the other offices. If an inventor engaged a solicitor as his agent for prosecuting his petition, as was very often the case, especially as time went on, he would, of course, incur further expense.

All the stages referred to above as forming part of the normal routine for granting patents, with the exception of those in which the Law Officer was concerned, which came somewhat later, were the rule at least as early as the fifteenth century. In these early days, instruments under the Great Seal were used for transacting nearly all the King's business from the greatest matter to the smallest, and little could be done without them. Too much, however, could sometimes be done with them, and it was soon recognised that their issue must in some way be controlled to prevent

anything passing the Seal without the King's knowledge and express sanction. The concern felt on this question shows itself as early as 1381, when the Commons prayed that an inquiry should be made into the state of the Chancery with a view to the removal of unworthy persons, as there was a widespread opinion that many of the Officers of the department were 'too fat in body and purse alike and too well clothed in fur'. Check and counter-check were devised from time to time against the misuse of the Great Seal until in the fifteenth century the elaborate system outlined above was evolved. In 1444 the Privy Council ruled that nothing should issue under the Great Seal until the King's warrant under the Sign Manual had been delivered to his Secretary and letters conceived upon this warrant had been directed under the Signet to the Keeper of the Privy Seal, and from thence under the Privy Seal to the Lord Chancellor of England, and this procedure was made statutory by an Act passed by Parliament in 1535. The dating of Letters Patent, that is the date from which the privileges or rights under the Patent accrued, was another matter of grave concern, at first, when there was no check on it, because of the danger of antedating and of patentees claiming their privileges from too early a date. The antedating of patents was therefore prohibited in 1439 by Act of Parliament, which enacted that no Letters Patent should bear a date earlier than the actual date of delivery of the Warrant for them into the hands of the Lord Keeper, and this rule was in due course automatically applied in respect of patents of invention as of all other instruments under the Great Seal. It continued to govern the dating of patents of invention until 1852, and was in its later years the cause of much uneasiness among inventors, for the lapse of some months between the petition for a patent and the delivery of the Writ of Privy Seal to the Lord Chancellor provided opportunity for a premature publication of the invention which would be sufficient to invalidate the patent when granted, and time for unscrupulous persons to possess themselves of the invention before the inventor had secured his rights. The objection was removed in 1852, since when patents of invention have been dated as of the date of the petitions.

The role of the Law Officers—the Attorney-General and Solicitor-General—in the preparation and drafting of all instruments to be issued

under the Great Seal and subsequently in the wider practice of patent law, deserves more space than can be given to it here, but something must be said, for the part they played was to become of overriding importance, and was even to survive by thirty years the drastic changes in procedure made in 1852. It was not, in fact, till as recently as 1932 that the Law Officer ceased to have direct connexion with Patent Office practice, for until the Patents Act of that year came into force he was the principal Appeal Court from decisions of the Comptroller. When he was first brought in to patent practice has not been established, but it was certainly not later than the middle of the sixteenth century, and his participation had become standard practice by the beginning of the next century, from which time not only was a report by the Law Officer in favour of a petition an essential preliminary to any grant, but it was he who had the responsibility of drafting the Patent Bill which as a matter of course determined the form of the final instrument, and the conditions and so forth that were to be inserted in it. The wording of a Patent Bill was largely formal and to a great extent already prescribed by long tradition, but it was always subject to modification in the light of experience and to meet new circumstances either general or special to a particular case, and it must have been kept under constant observation and review. Thus, for instance, the clause which will be found in all Letters Patent of Invention between the years 1720 and 1852, rendering the patent void if there were any transfer or assignment of the patent rights or benefits or of any share of them to any number of persons exceeding five (about 1832 increased to twelve), was inserted, not by Statute, but on the authority of the Law Officers who decided that some such clause was rendered necessary by the passing of the Statute of 1719 for 'restraining several extravagant and unwarrantable practices', though this was concerned, not with Patents, but with the spate of speculation that accompanied the 'South Sea Bubble'. And so again, when the patent specification became a feature of patent procedure in about 1730, as we shall see later, it was the Law Officer's business to determine whether and in what precise form reference to it should appear in the Letters Patent, and, therefore, very largely the position that the specification was to occupy in patent law in the future. That some care and thought had to be

given to the drafting of such clauses as these should be clear from the fact that when once a patent had passed, its terms could be changed or avoided only by a special Act of Parliament passed for the purpose.

The Law Officer also played a major part in another very important side of patent procedure, namely, the system under which interested persons could enter 'caveats' or opposition to the grant of patents dealing with matters in which they were concerned. The practice of entering caveats had been in being from an early date and had become general by the seventeenth century. They could be entered and heard at any or every stage up to and including that of the Great Seal, but the more usual procedure was for them to be entered at the Office of the Law Officer and for the rival claims to be considered by him before his report on the Petition was sent to the Crown. Even when a caveat had been entered at the Chancery Patent Office, it was the practice of the Lord Chancellor in most cases to send the papers to the Law Officer for him to decide the issue, though there are a few cases in which he himself heard the parties. The procedure at the office of the Law Officer was for any one interested in a particular class of invention to enter a caveat with the Law Officer's Clerk, staying the progress of any petition relating to that class of invention until he had been heard, the caveat being recorded in a book kept for the purpose. Caveats lasted for a definite period, usually three months, but could be renewed as often as desired on payment of the requisite fee. The following are examples of actual caveats; the first is from the Privy Seal records and the other two from the Petition Entry Books of the Secretary of State's Office, but they are representative of all:

'I desire a caveat may be entered in the [Privy Seal] Office that nothing pass concerning any patent for tobacco-pipe clay till notice first given to me [Sir William Morrice, Secretary of State] (18 June 1663).

'Let nothing pass concerning any invention for raising of water to be conveyed by pipes into London till notice be first given to my Lord Mayor of London or the City Solicitor (26 Nov. 1695).

'It is desired by Mr. Phineas Bowles that no patent may pass for casting large looking-glass plates till notice be given to Mr. William Cooper, Attorney in Gravell Lane, Southwark (20 July 1699).'

Whenever a petition for a patent was received at the Chambers of the

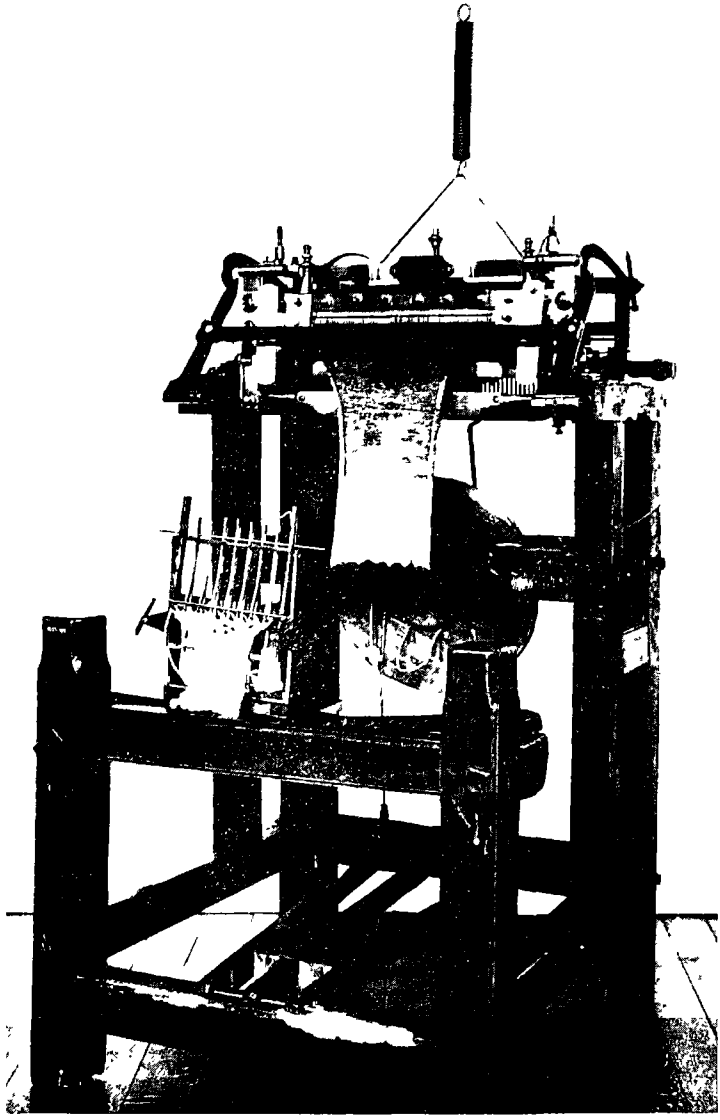
Law Officer, the Clerk would search the Caveat book to see if there was any caveat relevant to the particular invention. If one was found, he would give notice to the interested party that opposition could be entered within a certain number of days, and would appoint a time for the two parties to appear before the Law Officer, which they did or not at their option, represented sometimes by learned counsel. The Law Officer heard each party in turn (for, of course, the subject matter of the invention could not be divulged to third parties at this stage), and decided on the respective claims, and then according to his decision he either issued a favourable report on the pending petition, which would then resume its normal course, or withheld his approval of it by not submitting a report, in which case the petition lapsed and was heard of no more. Fees to the amount of £3 10*s.* were charged for the hearing, of which £2 12*s.* 6*d.* went to the Law Officer and 17*s.* 6*d.* to the Clerk. The caveat procedure was made use of on a quite considerable scale and contributed not a little to the way in which patent procedure subsequently developed.

The possibility of the grant being opposed at any stage no doubt also added to the anxiety of the inventor, who never knew what further delays were to be imposed on him and was ever fearful of the extra opportunities thus given to others to get in first. When, however, he at last had his patent sealed and delivered, he found himself in possession of a stout wooden box encased in leather and with the Royal Arms in gold on the lid, and inside it a folded skin of parchment with an impression of the Great Seal in yellow wax—about 5 inches across and 1 inch thick—attached to it at the bottom by a silken cord. It was a most impressive looking document, and no doubt, at least in the early days, sufficiently awe-inspiring in itself to compel compliance with the patentee's claims. Patents continued to be issued in this form with the Great Seal in wax pendent at the foot until as late as 1878, in which year under the Crown Office Act of the previous year an impression of the Great Seal embossed on a wafer was substituted for the wax one. From 1883, patents have been printed on paper and authenticated by the special wafer seal of the Patent Office. The terms of the grant, contained in from 1500 to 2000 words in phraseology and at a length peculiar to legal documents, consisted of several parts, for the most part long since formalised. (i) The name and titles of the sovereign and

the address to 'all to whom these presents shall come'; (ii) the recitals, which included the patentee's name, the representations made in his petition, and the title of the invention; (iii) the grant itself, in which the sovereign, of his 'especial grace certain knowledge and mere motion' gave to the patentee his executors administrators and assigns during the term of fourteen years the sole privilege to make use exercise and vend his invention within that part of the United Kingdom of Great Britain and Ireland called England, the dominion of Wales, and the town of Berwick-upon-Tweed; (iv) the vital prohibition to all others, 'requiring and strictly commanding all and every person and persons bodies politic and corporate and all other our subjects whatsoever' not to use the invention directly or indirectly during the said term of fourteen years without the patentee's consent; and (v) the various conditions on which the grant was made, and in default of which the patent would be void. Such is the document that evidences the patentee's right to prevent all other persons from putting his invention into practice for a limited time. It carries, however, no guarantee of the validity of the grant. Is there, in fact, inventiveness present? Are the inventor's claims to have discovered something new and useful and to be the true and first inventor thereof justified? Have the conditions contained in the grant been fulfilled? Such questions as these, if contested, are matters for the High Court alone to decide, and the possession of the document will avail the patentee nothing if the test before the Court fail and the grant in consequence be declared invalid.

It should be noted that each of the offices through which, as detailed above, a petition had to pass on its way to the patent grant could and did act only on the authority of a warrant issuing from the office immediately preceding it in the chain, and that each kept a complete record of its proceedings, not only in their various docquet books, but by filing these warrants. Thus the Secretary of State's Office filed the original petition and the Law Officer's reports; the Law Officer, the signed warrants for the Bills; the Signet Office, the King's Bills; the Privy Seal Office, the Signet Bills; and the Chancery Office, the Writs of Privy Seal; while the letters patent themselves were transcribed in full on the patent rolls. Fortunately, all these original records (with the exception of the Law

Great Seal of Queen Elizabeth, A.D. 1586. From an impression at the Public Record Office.



Stocking-frame (XVIIIth century) invented by William Lee in 1589, a patent is said to have been refused because of injury it might do to the hand-knitters.
(Crown Copyright. By courtesy of the Director of the Science Museum.)

Officers' which seem in most cases to have been taken away by each occupant of the office when he vacated it) have been preserved from the earliest dates and are to-day in a fairly complete state in the Public Record Office, enabling us to get a complete picture of the process of patenting. It was from these originals that the printed records and indexes of English patents of invention from the year 1617 were compiled in 1853.

THE PATENT SPECIFICATION

These are, however, to modern eyes, but the bare bones, giving us the facts of the grant but very little about the actual nature of the invention and its method of working. The essential document for this purpose is the patent specification, which, barely mentioned hitherto, must now occupy our attention. Coming late on the scene, it is to-day the most widely known and most important of all patent literature and, in itself, a document of great technical and commercial significance.

The patent specification can be defined as a document containing a description of a patented invention sufficiently full and detailed to enable the invention to be understood in its nature and applied in practice by persons skilled in the particular art without further experiment, separate from the Letters Patent themselves but subject to a clause in them, the non-compliance with the terms of which would serve to invalidate the grant. The specification did not become a regular feature of English patent practice until the first half of the eighteenth century, but from this time to the year 1852, and in certain circumstances to the year 1883, the validity of a patent was made dependent on the lodging within a stated time of full specification, by the insertion of a clause in the grant in substantially the following form:

'Provided also that if the said A.B. shall not particularly describe and ascertain the nature of the said invention and in what manner the same is to be performed, by an instrument in writing under his hand and seal and cause the same to be inrolled in our High Court of Chancery within six months next and immediately after the date of these our Letters Patent, then these our Letters Patent and all liberties and advantages whatsoever hereby granted shall utterly cease determine and become void.'

There was no statutory sanction for this clause, but once a patent had been

sealed containing it, its observance was obligatory on any patentee who wished to hold a valid patent, and nothing but a special Act of Parliament could give him dispensation from its provisions. In consequence of this clause, the enrolment of a specification became the established practice and there came into being the well-known series of English patent specifications, unbroken and complete to an extent unknown elsewhere, which give to this country such an important place in the history of patent law.

When first introduced, the specification was no doubt intended mainly to show the confines of the patentee's monopoly rights and the limits of the field which others were prohibited from entering, but it soon became through judicial interpretation of the law, on the one hand the main consideration for the grant, displacing the original working condition in favour of a full and sufficient disclosure of the invention, and, on the other hand, a test of novelty of an invention quite distinct from that of the prior user laid down in the Statute of Monopolies. This shift of emphasis from the definite introduction of a new industry as the main consideration for the grant to the mere provision of instructions for any one who would to put the invention into practice after the expiry of the grant is certainly noteworthy, and has led many to assume that working was never a condition of the British grant, but it must not blind us to the historical facts. There were nearly two centuries of patents before the specification as we know it made its appearance as a regular condition of the grant, two centuries during which patents were issued, fought over, revoked, validated, and extended. The reason for this is not far to seek. At first technical literature was in its infancy and a general demand for descriptions of inventions could hardly have been carried out; nor when the introduction of an industry or trade new to the country or some entirely new practice was the subject of a grant, was a description really called for, the powers of revocation by the Privy Council being held to be sufficeint to safeguard the interest of those whose livelihood might be endangered by a new grant. It was only when competition between inventors arose, when several inventors were working in the same field or possibly trying to solve the same problem, and when specific improvements, great or small, were being made in existing machinery or industrial processes, that the necessity would have arisen for the definition of rival inventions. This is

evidenced in some early patents, in which the inventor emphasizes that his invention has already been seen or approved by the sovereign or his officers or that it has been described in some book to be presented to the King. But the 'Caveat' procedure already referred to, by which an inventor could stop the passing of a patent until he himself, being an interested party, had been heard and the Law Officer could require from both sides particulars of their respective inventions before issuing his report, would alone have clearly demonstrated the need for a disclosure of the invention, and must have accustomed inventors and the Crown to the idea by the middle of the seventeenth century, by which time the caveat system was well established. There only then remained, to complete the process, the transition from this practice of revealing inventions in particular cases and in secrecy to the Crown to the general incorporation of the description as part of the grant itself for all to see. The bridging of this gap brought the specification into being.

What is usually considered—and with some justification—to be the first patent specification available to us is that which was lodged in connexion with John Nasmith's patent for the preparing and fermenting of wash from sugar and molasses granted on October 3, 1711. But Nasmith's specification does not come entirely unannounced. It is the culmination of a long series of attempts by the opposing interests of the inventor and the Crown to produce a workable system satisfactory to both, and is rather the earliest known example of the procedure that became in the end the general rule than the first 'specification' in fact. For the records prior to 1711 reveal many cases in which a description of the invention in one way or another was attached to and formed part of the patent, and distinguish two main methods by which this was done. One—the more general and usual method and one probably introduced at the instance of the Crown—was an expansion of the title of the invention or the insertion of a description of it in the recitals that preceded the actual granting clause in the patent; the other—exceptional, but the one in fact that subsequently became the rule, no doubt to meet objections to the first method on the part of the inventor—was the insertion in the grant of a proviso that required the delivery of a description within a specified time after the sealing. Of the first method a close examination of the

patent grants yields many examples. Thus, in Elliott & Meysey's patent of April 1, 1614, the patent, after reciting that the patentees had lately found out a new way of converting iron into steel, continues 'which converting of iron into steele is performed by means of a reverberatorie furnace with pottes luted or closed to be putt therein contayning in them certaine quantities of iron with other substances . . .' and all persons are then charged not to 'attempt presume or goe about directlye or indirectly to make steel out of iron or to make or convert iron into steel according to the said new way and course of working or making of steel before mencioned or to erect frame make or use any of the said furnaces called reverberatorie furnaces or any of the devises before mentioned'. And in Crumpe's patent of January 9, 1618, for draining mines, the title in the grant is followed by the clause 'And whereas wee are informed that the said drayning and drawing of mynes myneralls and colepitts and raysing of waters aforesaid, is to be done and performed by the use of certeine engines and instruments or devises . . . that is to say, . . .', followed by forty lines or so in the printed patent describing the new invention and showing in what way it differs from other apparatus then in use for the same purpose. Edward Ford's patent for navigating vessels dated March 4, 1642, has the following clause in the recitals: 'The way whereof hereby declared by the said Edward Ford for the effecting of the particulars above mentioned, being partly by new fashioned oars whose fins open and shut and are to be applied to the vessels . . . and partly by &c. &c.' Abraham Hill's patent for making carriages, etc., of March 3, 1665, recites that the petitioner has invented certain inventions 'the fabricks whereof are hereafter described' and the granting clause is followed by a description of the invention. It is, of course, not being argued that the descriptions given in these early patents are necessarily such as would be regarded to-day as sufficient to support a valid patent, but there can be little doubt that they were at the time inserted in the patent for the definite purpose of setting forth the way in which the invention was to be carried out and of differentiating it from others in the same field.

Many other examples of this practice of embodying a description of the invention in the recitals or elsewhere in the grant itself could be given, continuing up to the time of the introduction of the specification proper

in 1711 and even beyond it; John Kay's patent of May 26, 1733, for his important invention of the fly-shuttle (the first of the many inventions that revolutionised the textile industry) has no specification in our sense of the word, but a clear and full description of the invention is contained in the recitals of the grant; and as late as 1745, some years after the enrolment of a specification had become the regular practice, Roger Plenius's harpsichord patent, July 10, 1745, instead of requiring a specification to be enrolled after the grant recites that Plenius had found out and brought to perfection a new invention . . . which 'is contrived in the following manner, to wit:—' this being followed by a long and detailed description.

Three cases of this type are exceptional and must be mentioned, because in each case instead of a description being embodied in the grant, a drawing of the invention is referred to and is still extant. These three are Lewis Bayly, April 3, 1673; Thomas Neale, November 12, 1675; and John Williams, March 24, 1692. Bayly's patent recites that he has 'invented and experimented beyond the seas a new engine for the cleansing and digging rivers . . . to any depth under five and twenty foot at low water, a draught or scheme whereof fairly drawn upon vellum is hereunto annexed'; Neale states that he has invented a new engine or pump for draining mines 'a model [drawing] whereof is hereunto annexed with an explanation'; and Williams that he has invented a diving engine 'the model [drawing] whereof is hereunto annexed'. Actually in none of these does the 'model' or drawing appear on the patent rolls, but there is in each case a drawing attached to the King's Bill; no doubt the original drawings were attached to the King's Bills by the Law Officer, but no copies were made to go with the Signet or Privy Seal bills and none were therefore entered on the patent rolls, though the references to them in the patents remained.

Whether these descriptions of the inventions were inserted in the patents on the initiative of the inventor or at the request of the Crown is not known and may never now be accurately known; the records of the offices of the Law Officers which could have been so informative on this and other points have for the most part not survived. There is, however, some evidence on both sides. In some of the cases the descriptions form part of the original Petitions and must have been so included by the inventors themselves; if so they would automatically get into the patents without

further action by the Crown. But there are other cases which indicate that the Crown or the Law Officer took the initiative in the matter and asked for further information on the invention to be supplied. Thus in Williams's patent 'with drawing annexed' referred to above, there appears to have been no drawing with the Petition; it is first mentioned in the King's Warrant to the Law Officer, and it seems likely that it was filed by official request, especially as a warrant had been issued only a week or so before for another patent on the same subject, and it would have been necessary, therefore, for the later invention to be disclosed to the Crown in some form before the patent could issue. As has been said above the 'caveat' system would have accustomed both the Secretary of State and the Law Officer to cases of this kind. There is one particularly interesting example in 1661 on a petition presented by Samuel Morland for a patent for his invention of a gunpowder engine for raising water—incidentally the first internal combustion engine—though for some reason not known to us no patent was sealed on the petition. Two warrants to the Law Officer appear among the State papers on this petition. The one, unsigned and undated, refers simply, as does the petition itself, to an engine for the raising of water; the second signed and dated December 11, 1661, reads 'an engine for the raising of water by the force of air and powder conjointly', the additional words, obviously deliberately inserted to differentiate the invention from others for raising water, being added by the Secretary of State, or quite likely, as such warrants had to be signed by the King, and he was in close touch with Morland's work, by Charles II himself.

In view of such cases as these and of the experience obtained through the hearing of caveats, it must in general be assumed, it is suggested, that descriptions were inserted in the first place at the instance of the Crown in order more clearly to define the grants that were being made in ever-increasing numbers, and that as the practice became more common, some inventors anticipated the Crown by putting more or less detailed descriptions in their petitions. It is, however, unlikely that the practice would have been, at any time, very popular with inventors, and still more unlikely that they would have initiated it, for it meant the full disclosure of the invention before the date from which the patent rights started, which it will be remembered was the sealing date. It may have

been this unwillingness on the part of the inventor that decided the course of events, the Law Office still insisting that descriptions must be furnished, but finally agreeing that, to meet the inventors' objections, they might be postponed till after the patents were sealed if their subsequent enrolment in Chancery were made a proviso in the grant. A few isolated instances of this latter procedure or its equivalent occur in the records before Nasmith's patent of 1711, and while perhaps these contributed little or nothing to the ultimate form, they are undoubtedly landmarks pointing the way. The earliest example is the patent granted to Simon Sturtevant on February 29, 1612, for the 'working melting and effecting of iron steele and other Mettles with sea-coale or pit-coale'. In this, Sturtevant declares that the means for carrying out the invention 'are in some measure mentioned and expressed in the schedule or schedules to these presents annexed, and shall be more fully amply and particularly demonstrated, specified, described, and contained in a large treatise which the said Simon Sturtevant hath already conceived and shall bee put in print and so published before the last day of Easter terme next ensuing the date hereof, which treatise so to be printed shall be intituled "A treatise of Metallica",' and the monopoly for thirty-one years is granted for the invention as described in the schedule or as shall be more fully described in the treatise. *A treatise of Metallica* was duly printed and published within the stipulated term. It is very obscure and is descriptive more of the objects of the invention and of the many advantages that are certain to accrue from it than of the method of carrying it out; it is indeed more a promoter's appeal for support than an inventor's patent specification. But the whole procedure adopted by Sturtevant was a curious prophetic forecast of what nearly two and a half centuries later was to become the regular practice—a 'provisional' specification filed with the petition followed by a 'complete' specification filed subsequent to the grant—and is noteworthy on this account, even if it may perhaps be regarded rather as a freak than as a direct forerunner of Nasmith's specification. Later in the same year, however, two patents were granted which have a decided claim to be placed in the ancestral line. They are both for water pumps for draining mines (a subject very much in evidence in the early patent records). In the first, Richard Barnewell's patent of

June 11, 1612, there is a clause in the patent to the following effect: 'Provided always and our will and pleasure is that the said Richard Barnewell do bring a model of the said engine to remain in some place to be approved by the Chancellor of the Exchequer that it maye appeare from tyme to tyme what is by these presents graunted unto him'; in the second, Joseph Usher's patent of December 21, 1612, the recitals in the Letters Patent has: 'of which engine instruments or new invention they have undertaken within one month after the date of our Letters Patent to deliver to our Chancellor of England a perfect model or description to remain and be disposed as our said Chancellor shall think fit'. There is little doubt that if the description referred to in the latter grant had been discovered among the records it would legitimately have been considered as the earliest specification. The fact that these two grants were both for water-raising engines is probably the reason why the descriptions were insisted on and why the exceptional clauses quoted were inserted in the grants.

In 1614 three more patents were granted with similar clauses, requiring the subsequent delivery of descriptions of the inventions to the Attorney-General. No further very clear instance of the kind occurs until 1688, except for two Acts of Parliament concerned with patents which should be noted. The first is the Act of 1663 granting to the Marquis of Worcester the monopoly rights in his water-commanding engine for ninety-nine years, which contains the clause 'Provided always . . . that a model thereof be delivered by the said Marquess or his Assignes to the Lord Treasurer or Commissioners for the Treasury for the time being at or before the 29th day of September, 1663, and be by him or them put into the Exchequer and kept there'. The other is the Act for extending the term of the patent granted to Sir Philip Howard and Francis Watson on March 2, 1669, for sheathing ships' bottoms, which contains the clause 'Provided also and be it enacted that the said Sir Philip Howard and Francis Watson shall enter or cause to be entered in his Majesty's Court of Exchequer the said manufacture art or invention within three months . . . and in default of such entry to be made as aforesaid this Act and everything therein contained to be utterly void'. Diligent search has so far failed to discover the Marquis of Worcester's model (by which a drawing

or sketch was probably intended and which might have enabled us to decide whether it was in fact an early steam engine or not), but Howard and Watson's description of their invention was duly entered and has been printed in the official series of patent specifications. Next in order for the history of the specification comes the patent granted on November 23, 1688, to Paul Clowdesly, William Sherard, and Peter Duclen for weaving silk goods which as well as stating that the inventor Peter Duclen has promised to teach and instruct his wife and children and his partners in the invention and to take apprentices declares that the patentees 'do further covenant with us by these presents that they or some of them their or some of their executors administrators and assigns shall forthwith deliver unto us such an account in writing of the whole mistery of lustrating or dressing the said silks so that a master weaver may on perusal of the said account be able effectually to dress and lustrate any the silks aforementioned (yet not to do the same during the continuance in force of this our grant contrary to the purport or effect thereof)'. The 'account in writing' if it was furnished, has not come down to us, and the next case on our list is Nasmith's patent of October 3, 1711, in which for the first time the full procedure is on record, and a specification duly enrolled according to the proviso in the Patent is available to us on the Chancery rolls.

Nasmith did not refer to any description of his invention in his petition, and there is nothing to indicate that the idea of submitting one was his; he prayed simply for a grant for his invention 'for the preparing and fermenting of wash from sugar, molasses, and all sorts of grain'. The first mention of the specification occurs in the report of the Law Officer to the Crown and it seems likely that he took the initiative and told the inventor that before he could issue a favourable report on the petition he must have a fuller description of the new process. Possibly Nasmith argued that it was not safe for him to disclose his invention before the patent was sealed, and himself suggested that he should lodge a description as soon as the grant had passed. Be this as it may, the Law Officer issued his report with the words 'the Petitioner thinks it not safe to specifie in what the new invention consists but proposes that so soon as the patent shall be passed, the same shall be by him ascertained under his hand and seal to be inrolled

in the High Court of Chancery, to which the patent may referr to make the grant therein certain', and the Queen's warrant for the Bill required the Law Officer to insert a clause therein to that effect. The patent grants Nasmith the sole use and benefit of his invention 'in such manner and with such materials as shall be ascertained to be the said new invention by writing under the hand and seale of the said John Nasmith and inrolled in our High Court of Chancery within six kalendar months after the date of these presents'. (It is of interest to note that in the King's Bill as originally drafted by the Law Officer, enrolment of the specification was required within one month of the date of the patent, and that this was changed to six months at Nasmith's request; one month was the usual period in the early days of the specification, but six months became general later.) The specification was duly enrolled within the six months' period allowed, the first document of its kind on the records.

The practice adopted in Nasmith's case was not, however, immediately put into operation for all patents. Of the 158 patents granted between the years 1711 and 1734 when the practice became standardised, only 29 had specifications enrolled. Most of these specifications were enrolled in pursuance to clauses in the Letters Patents similar in wording to that in Nasmith's patent, but in Champion's patent of April 20, 1723, a new wording of the specification clause was introduced, which specifically voided the grant in the event of a specification not being enrolled within the stated time. This new wording, which was almost surely due to the Law Officer, became usual from 1730 onwards, and is the form in which the clause referring to the post-seal enrolment of a specification always appears in patents from 1734 to 1883.

The new specification practice did not commend itself wholly to patentees, and from time to time attempts were made by them to avoid the specification proviso in the patent or to secure dispensation from it. In 1793 a bill was introduced into Parliament providing that in given circumstances, specifications might be kept secret and their enrolment postponed till after the expiry of the respective patents, thus anticipating the present-day practice of granting 'secret' patents for inventions certified by the War, Naval, or Air departments, to be of special importance. This bill was not proceeded with, but there are one or two cases in which

individual patentees managed to secure private Acts of Parliament enabling the enrolment of their own specifications to be postponed. There are such acts, for example, relating to Joseph Booth's patent of January 23, 1792, and to James Lee's patent, June 9, 1812.

The introduction of the separately enrolled specification brought with it additional expense to the inventor over and above the charges already given on pp. 16–18. There was a stamp duty, which, starting at 2*s.* 6*d.* in 1783, rose to £5 after 1804, an enrolment fee of 10*s.* 6*d.* per parchment skin, and a certificate fee of 3*s.* 4*d.*, but the greatest cost was for the preparation of the document itself with drawings, which had to be on parchment and might cost £20 and upwards.

The subsequent history of the specification may be outlined here. As has been said, the practice of requiring the enrolment or deposit of a specification within a definite time after the sealing of a patent persisted for well over a hundred years and was not finally discontinued until 1884, but the Patent Law Amendment Act of 1852 made a radical change in the position by enacting that patent rights should in future date from the date of application for a patent instead of from the date of sealing, and by permitting inventors, their priority rights thus protected, to lodge 'Complete' specifications with their applications if they so desired.* The old form of post-seal specification was retained, however, as an alternative under the new procedure, but with this condition, that, if this alternative were adopted, a 'Provisional' specification describing the nature of the invention had to be filed with the application sufficient to allow the invention fully described in the subsequent 'Complete' specification to be identified with that for which the patent had been sealed. The two alternative methods of applying for a patent, either by filing with the application a Provisional specification describing 'the nature of the invention', and following it within a certain period with a Complete specification 'particularly describing and ascertaining the nature of the invention and in what manner the same is to be performed', or by filing a Complete

* If an applicant adopted the course of filing a complete specification with his application, then the patent granted thereon, in lieu of the usual condition voiding the patent if a specification were not filed within the stated time, contained a clause voiding the grant if the specification filed with the application did not fully disclose the invention.

specification in the first instance with the application, were continued by the Patents and Designs Act of 1883 with this important change, that a Complete specification following a Provisional had now to be filed and to be examined and accepted by the Patent Office before the patent was issued instead of after it, and they still, in this form, remain notable features of British Patent law. The value of the Provisional specification procedure to the inventor lies in the chance it gives him, at the very small fee of £1, of safely applying for his patent, and thereby securing its date, before he is ready to draft his Complete specification, and of then utilising the limited time allowed—now twelve months—between the filing of the two specifications for further inquiries both technical and commercial, and for fully developing the method of carrying his invention into effect. It is not known outside the countries of the British Empire, but corresponds in practice to the American allowance, for priority purposes, of a period between the conception of the invention and the application for a patent, with this difference, however, that here the date of conception is officially registered and requires no argument. Like so many British institutions, the Provisional specification had no sudden origin but was the result of a slow growth of ideas. For it did not originate—except in name—with the 1852 Act. It had always, of course, been the law that the invention described in the enrolled specification had to be the same as that for which the Patent had been sealed, and early in the nineteenth century it became usual as a security measure for a short description of the invention to be left with the Law Officer, though such a procedure was not legalised until 1850, when Rules were issued by the Attorney-General ordering that an outline description in writing or drawing must be deposited in the Office of the Attorney- or Solicitor-General before any Report on the petition would be made. In the Act of 1852 this outline description was replaced by the Provisional specification as we know it to-day.

Since 1852, all Complete specifications that are accepted by the Office have been printed in separate leaflet form within a week or two of acceptance, together with their Provisional specifications, if any, and copies are put on sale and made available to the public at all important libraries. (Provisional specifications that were not followed by a Complete specifica-

tion were also printed up to the year 1883, but since that year have not been published or accessible to the public.) Prior to 1852, specifications were not printed but were enrolled at one of three Chancery offices at the patentee's choice, the Enrolment Office (where the specifications were entered on the 'Close Rolls'), the Rolls Office, or the Petty Bag Office (in both of which they were entered on 'Specification and Surrender Rolls'). They were, however, at all times open to public inspection, it being possible for the rolls in each of the enrolment offices to be searched on payment of a small fee, though such a search must have been anything but easy or convenient, few facilities in the form of indexes and so on being available. The demand for better access to the specifications was continuous and loud, and was first met by the commercial publication of technical journals, a number of which were started for the express purpose of giving the full or abridged specifications of all important new inventions as these were enrolled, taken direct from the original specifications or from the enrolments. One such journal was the *Repertory of Arts and Manufactures*, started in 1794, and continuing to 1862; others were *The London Journal of Arts and Sciences* (1820), and *Gill's Technical Repository* (1822). On the passing of the 1852 Act, the Commissioners of Patents, fired by the enthusiasm of Bennet Woodcroft, took in hand the publication of the existing records, and between the years 1853 and 1857 completed the printing in blue-book form of the whole series of specifications and of the patents themselves for cases where no specifications were enrolled, from the year 1617 to the year 1852. Thus it is that Great Britain possesses this magnificent unsurpassed printed record of patents of invention—this 'blue-coated encyclopædia of human progress', as it has been called—that has given this country its unique position in the story of patent law and has perhaps misled some into thinking that it alone contributed to it in the early stages. The record may not be absolutely complete, even for the period it covers, and it lacks the hundred or so patents granted before 1617 and the few granted during the Commonwealth and Protectorate, 1649–1660—there are eighteen of these known, some granted by Act of Parliament and others by Letters Patent of the Lord Protector or through Parliamentary Ordinances—but otherwise it forms a continuous series, numbering well over one million from 1617 to the present day. It

should be noted that the date for the start of the printed series, 1617, was chosen quite fortuitously—simply because the docquet book of the Clerk of the Letters Patent in the Court of Chancery (an office created in 1618), which provides the only original list of patent grants, started in that year, and not because the earlier records do not exist.

The story of the specification told here has been confined to England where so far as the author's information at present goes, it had its origin and development. But other claims have been made, in particular for France, from which country there is given as evidence the case of Abel Foullon's invention of a range-finder. Foullon obtained French patent protection in 1551 for his invention, and described the instrument in a book which was printed and published 'by Royal Command' in 1555. The book is undeniably a description of the invention and is referred to in the patent, but an examination of the patent does not fully bear out the contention that the book can be called a patent specification. Its wording is as follows: '. . . Nous ayons ordonné audit Foullon de faire besongner audits ouvrages artifices et instrumens et iceux mettre et exposer en vente pour estre veuz et entenduz d'un chacun. . . . A iceluy avons donné et octroyé et donnons et octroyons par ces presentes faculté permission et previlege expres pour durant le temps et terme de dix ans prochainement venant faire ou faire faire seul . . . les dits ouvrages artifices et instrumens ensemble imprimer ou faire imprimer la description de l'usage audit holometre et iceux exposer ou faire exposer en vente, faisant inhibitions et defenses a tous autres artisans ouvriers et imprimeurs ils n'ayent a faire ou faire faire n'exposer en vente les ditz ouvrages artifices et instrumens et description audit usage d'holometre . . .', and it seems clearly to show that the grant bestows on Foullon two distinct rights: (1) the sole privilege of making and selling his invention; and (2) a licence to print and sell and to prevent others printing and selling a book describing its method of working. It is not a condition of the grant that the invention must be as described, and its validity seems in no way to be dependent on the publication of the book. If this construction of the document is correct, there seems little justification for calling Foullon's book a patent specification (though of course it retains its very great interest as an early description of a patented invention) and we may continue to concede priority in this

matter to this country until, as might well happen at any time, further and more convincing examples are brought to light.

1852 AND AFTER

The Patent Law Amendment Act, 1852, was the first Act to be placed on the Statute Book prescribing the procedure for obtaining patents of invention. It was introduced after many years' agitation throughout the country for drastic reform of the law—brought to a head by the opening of the Great Exhibition in London in 1851—and in its results completely recast the somewhat antiquated system that had been in use during the whole of the previous three centuries. In the first place, the new Act separated patents of invention completely from other patents under the Royal Prerogative, and placed them under the immediate control and direction of Commissioners of Patents specially appointed for the purpose, with a single office and staff for all dealings with inventors and their agents; it enacted that a single patent covering the whole of the United Kingdom should replace the three separate patents for England, Scotland, and Ireland—each with its own attendant procedure, sealing, and fees—which had hitherto been necessary to secure protection in all three countries *; and it established patent fees which, though sufficiently heavy in the aggregate, were for the greater part payable not before but at intervals after the sealing of the patent, and then only if the patentee desired to keep the patent in force for the full term. The change the Act made in the dating of patents—from the date of sealing to the date of the petition—and the new specification procedure, have already been related, but it also provided that specifications instead of being on parchment and enrolled in Chancery, should thereafter be written on paper and filed in the Office of the Commissioners, and further that all specifications should be printed and published and that adequate indexes and other records of the proceedings of the Office, as well as a Register of Patents, should be provided for the use of the public. The Act also for the first time gave statutory effect to the terms of Letters Patent and of the Petition and other forms used during the proceedings.

* Eire has again separated out, and has issued its own patents since 1925. Northern Ireland is still covered by the British grant.

Some of the earlier routine, though now done through the Commissioners' Office, was retained under the new Act, not to be finally swept away till 1883. The reference to the Law Officer was one, but the warrants were now sealed with the special seal of the Commissioners instead of being signed by the sovereign; the Letters Patent remained the same, engrossed on large skins of parchment with the Great Seal in wax pendent at the foot, until 1878, when a wafer Great Seal was substituted for the wax one, and 1884, when paper took the place of parchment and the wafer seal of the Patent Office that of the Great Seal. But such relics did not greatly affect the individual inventor, whose position was immensely improved. The increase in the number of patents granted from 455 in 1851, and an average of 468 a year for the decade 1842–1851, to 2187 in 1853, and an average of 2047 a year for the decade 1853–1862, shows the extent to which the new provisions were used and the impetus to invention that they gave.

The regime of the Commissioners of Patents lasted until 1883, when, by the Patents Designs and Trade Marks Act of that year, they were abolished, together with all vestiges of the pre-1852 practice, and replaced by the Patent Office as a department of the Board of Trade and under the administration of a Comptroller-General of Patents Designs and Trade Marks in substantially the form that exists to-day. But before the Commissioners disappeared they had done much good work, primarily in connexion with the publication of patent information, for which they initiated and established forms such as the printed copies of specifications and abridgments of specifications, which have since become the standard practice in all important industrial countries. The abridgments form a notable and unique series comprising the entire period from 1617 to date; published periodically in volumes, each devoted to a specific subject-class, and provided with subject and name indexes, they form a valuable fireside means of searching through a mass of material, too bulky for any but the largest libraries. Finally, not the least of the benefits conferred on posterity by the Commissioners was the founding of the Patent Office Library, which, opened to the public on March 5, 1855, with a few hundred volumes, has grown to be one of the great public technical libraries of the world with over 300,000 volumes comprising a wealth of periodical and

Earl of Mansfield (1705–1793) whose judicial decisions determined the course of patent law From portrait by Copley in the National Portrait Gallery.

Bennet Woodcroft, F.R.S. (1803–1878) Initiated the printing of patent specifications, abstracts and indexes. (Crown copyright. By courtesy of the Director of the Science Museum.)

book literature in all branches of technology, and the patent and trade mark publications of all countries.

These innovations of the Commissioners were maintained and greatly improved under the Act of 1883, but the decision deliberately taken by Parliament in 1852 and by the Commissioners to keep Patent fees at a discouragingly high level was reversed by the Board of Trade under the new Act. Fees under the 1852 Act had been £25 before the patent was secured and, if it was desired to keep the patent in force, sums of £50 at the end of the third (later, fourth) year, and £100 at the end of the seventh year. Under the administration of the 1883 Act, the initial fees before sealing amounted to £4 only (increased to £5 in 1905 and to £6 in 1932, at which figure it now stands), which kept the patent in force for four years, and there were imposed in addition renewal fees payable in respect of each year after the fourth that it was desired to keep the patent in force, starting with £5 in respect of the fifth year and increasing by £1 each year for the full term of the patent (14 years, from 1919 16 years), the payment for the last year being now £16. This reform, together with the modernisation of the practice, led to an immediate increase in the numbers of applications for patents and of patents granted on them, which rose from 6241 and 4337 respectively in 1882 to 17,110 and 9118 in 1884.

In one matter, British patent practice was certainly not in the van, being a long way behind the United States and Germany, namely, in the official examination by technical officers of all new applications for patents. This was only started, and then only partly, under the 1883 Act, which enacted that scientifically trained 'examiners' should be appointed to the staff of the Patent Office for the purpose of ensuring that all new inventions were properly described in the specifications and of preparing the indexes and abridgments, but no examination into the novelty of new applications was made until the official search was instituted in 1905, the examining staff being increased fivefold for the purpose under the Patents Act of 1902. The powers of the Comptroller to examine specifications for novelty have been maintained and extended, but for reasons which appear good to the British Parliament, still fall short of those of the American and German patent offices.

And so we come to the present day. The story has been traced from the

early beginnings. It shows to a marked degree the peculiarly British practice of always advancing by making use of and building on past experience, through a progression of small steps rather than of sudden drastic changes of principle, and nevertheless describes a system which has protected through the centuries many of the basic inventions which have contributed to present-day industrial activities—the steam engine, textile machinery, the railway and locomotive, the automobile, the pneumatic tyre, iron and steel manufacture, the oil engine, the electric telegraph and lamp, the steam turbine, the cinema, wireless communication, television. Patents have frequently been described as of doubtful value economically and of mistaken justice, and as having hindered the adoption and spread of such inventions, which would have done better if they had been given free to the world. These ideas, however, though strongly held by authorities such as Richard Cobden, have never been widely spread, and have nowhere, except for a time in Holland, been put into practice. Nor does there seem at the moment any likelihood that they ever will be. Better means of preventing the abuse of the monopoly rights against the consumer, an extension of the practice under which inventors pass their patents to a non-profit-making corporation to be worked in the common interest, as is being done to an increasing degree in the United States, and the registration of patents in the name of Government authorities for the same purpose, as was done in this country for the manufacture of insulin, may well come about. In Soviet Russia two forms of patent are issued—one the ordinary limited monopoly type to the inventor, and the other in the form of a certificate under which the inventor transfers all his rights and obligations to the State in return for certain privileges in the social sphere, the State taking the necessary steps to put the invention into practice, or granting licences on terms, if it is of any value to the community. Great Britain did much the same thing—in its usual less revolutionary way—by the introduction in 1920 of what are called 'Licences of Right', under the Patents and Designs Act, 1919, though this provision is not taken advantage of here to the same extent that the Inventor's certificates are in Russia. Under this system, any patent at the request of the patentee can be endorsed 'licences of right', and thereafter any person is entitled to a licence to work the patent under such terms as may be agreed on, or as, in default

of an agreement, may be settled by the Comptroller on the application of either party, the patentee receiving in consideration of the endorsement a substantial reduction in the annual fees payable in respect of the patent. From the same date also, the British Patent Law provides that in the case of any patent for an invention relating to the preparation or production of food or medicine, the Comptroller must (unless he sees good reason to the contrary) grant to any applicant a licence to use the invention, and in settling the terms of the licence must have regard to the desirability of making the food or medicine available to the public at the lowest possible price consistent with giving to the inventor due reward for the research leading to the invention. Such provisions of the law as these have been introduced to meet objections to patents, and they will, no doubt, be improved and extended as time goes on, but the public conscience in favour of continuing the patent system as such remains, as well on the ground of economic expedience as on that of justice to the individual inventor. We may end with a quotation from Jeremy Bentham, as we began with one from the lawyer Fuller:

'With respect to a great number of inventions in the arts, an exclusive privilege is absolutely necessary, in order that what is sown may be reaped. In new inventions, protection against imitators is not less necessary than in established manufactures protection against thieves. . . . Without the assistance of the laws, the inventor would almost always be driven out of the market by his rival, who finding himself without any expense in possession of a discovery which has cost the inventor much time and expense would be able to deprive him of all his deserved advantages, by selling at a lower price. An exclusive privilege is of all rewards the best proportioned the most natural and the least burthensome.'

For notes, see pages 46–48.

NOTES

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„ 6 Brunelleschi's grant, 1421. Gaye, G., *Carteggio inedito d'artisti dei secoli XIV*, etc. Tomo., 1, 1839, pp. 547–9.
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„ 8 Hedler's grant, 1545. *Mitt. deutsch. Patentanw. Jg.* 34, 1934, pp. 26–7.
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„ 10 John Kempe's grant. Patent roll, 5 Edw. III, pt. 1, m. 25.
John of Schiedam. Patent roll, 18 Henry VI, Franc., 18, m. 27.

„ 11 Encouragement of industry. Patents and Designs Act, 1907–1942, proviso to section 27 (2).
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Groyett's grant, 1561. Patent roll, 3 Eliz., pt. 13, m. 34.
Leather grant to Heuxtenbury & Verberick, 1565. Patent rol', 7 Eliz. pt. 5, m. 29.
Elliott & Meysey. Patent roll, 12 Jac. I, pt. 1, No. 15.

„ 12 Jeremy Buck's patent. Commonwealth Act, A.D. 1651, c. 2.
Privy Council revocation clause. D. Seaborne Davies, *Law Quarterly Review*, Jan. 1934, pp. 102–4.

„ 13 William Cecil's part in the foundation of the English patent system is described in Cunningham's *The growth of English industry and commerce in modern times: The mercantile system*, 1921, pp. 53–84.

Page 14 Queen Elizabeth's proclamation concerning monopolies, 1601, and her 'Golden Speech' to the House of Commons. Price, W. H., *The English patents of monopoly*, 1906, pp. 156–62.

„ 15 Darcy *v.* Allen. Noy, W., *Reports of cases . . .*, [1656], pp. 173–85.

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„ 18 Pepys's *Diary*. Ed. H. B. Wheatley, Vol. 1, 1893, pp. 196–200, 202, 204.

„ 20 House of Commons complaint about Chancery. Maxwell-Lyte, *Historical Notes on the use of the Great Seal*, 1926, p. 7, quoting from Rotuli Parliamentorum, Vol. 3, p. 101.

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„ 21 South Sea Bubble Act, 6 Geo. I, c. 18, s. 18.

„ 23 Crown Office Act, 1877, 40 & 41 Vic., c. 41; Patents Act, 1883, 46 & 47 Vic., c. 57.

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„ 28 Elliott & Meysey. Patent roll, 12 Jac. I, pt. 1, No. 15.

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Plenius's patent, 1745. Printed series, No. 613.

Bayly's patent, 1673, Printed series, No. 169; Neale's patent, 1675, No. 186; Williams's patent, 1692, No. 308. (The printed copies are incorrectly described as 'Signet Bills'; they are actually King's Bills.)

„ 30 Morland's petition, 1661. State Papers Domestic, Charles II, Vol. 45, Dec. 1661; Calendar Charles II, 1661–1662, p. 175; Jenkins, R., *Collected Papers*, Newcomen Society, 1936, pp. 43–47.

„ 31 *Sturtevant's 1612 patent. Close Rolls, 10 Jac. I, pt. 5, No. 2; and* Sturtevant, S., *Metallica or The treatise of Metallica*, 1612 (reprinted by the Commissioners of Patents, 1858).

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Page 33 Clowdesly and others, 1688. Printed series, No. 261.

Pages 33–34 Nasmith's specification. Printed series No. 387; petition and warrant, State Papers Domestic, Anne, Bd. 15, No. 161; patent, Patent roll, 10 Anne, pt. 2.

Page 34 Champion's specification, 1723. Printed series, No. 454.

„ 35 Booth's specification, 1792. Printed series No. 1846; dispensing Act, 32 Geo. III, c. 73. Lee's specification, 1812. Printed series No. 3574; dispensing Act, 53 Geo. III, c. 179.
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„ 38 Foullon's patent. Foullon, Abel, *Usaige et description de l'holomètre*, Paris, [1555]: *Annales de la Propriété Industrielle*, Année 84, 1938, pp. 257–61.

„ 40 Great Seal Act, 1877, 40 & 41 Vic., c. 41.
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„ 41 Patents Act, 1902, 2 Edw. VII, c. 34.

„ 42 Licences of right. 9 & 10 Geo. V, c. 80 (1919), § 2. Food and medicine patents, *ibid.*, § 11.

„ 43 Jeremy Bentham, *The rationale of reward*, 1825, p. 318.

Considerable use has been made also of E. W. Hulme's 'The early history of the English patent system,' *Law Quarterly Review*, Vol. 12, 1896, pp. 141–154, Vol. 16, 1900, pp. 280–288, and of D. Seaborne Davies's 'The early history of the patent specification,' *ibid.*, Vol. 50, 1934, pp. 86–109, 260–74, as well as many communications from Corporal Max Frumkin, of the Polish Forces in England, who has devoted what spare time he has had during the war to further his already extensive knowledge of early patents, particularly those of Italy and the Continent, and has not hesitated to communicate it to the present writer.

The graph at pp. 44–45 is based on that in E. W. Hulme's *Statistical Bibliography*, 1923.